

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
JUMPER HARNESS, ITEM 392 ----- SV821756-2 (1)	2/2	392FM08 Electrical short or open from battery voltage sense (+) line to ground. Cable chafing against connector shell or shield. Improper connector strain relief. Faulty connection between the connector and the lead wires, insulation breakdown, conductor severed, contact resistance.	END ITEM: Short or open from battery voltage sense (+) line to ground. Indication of low (zero) battery voltage. GFE INTERFACE: (BATT VDC LOW) (BATT VDC XX.X) Warning message issued MISSION: False warning that battery has failed. Terminate EVA. CREW/VEHICLE: None. TIME TO EFFECT /ACTIONS: Seconds. TIME AVAILABLE: N/A TIME REQUIRED: N/A REDUNDANCY SCREENS: A-N/A B-N/A C-N/A	A. Design - Open and short circuits are minimized by the following: Each connector/adapt ring interface is locked in place to prevent rotation by a mechanical lock. AWG Teflon insulated wires and connector provide electrical conduction and insulation properties. Connector pins are operating at 56.7% of derated temperature and less than 1% derated voltage, and wire is at less than 1% c derated current. The convoluted tubing provides an additional layer of insulation to prevent shorts between the EMI braid and any internal unshield conductors. The woven Halar sheath is assembled over the internal cables to provide protection from abrasion and impact. Connector pins are insulated b polyphenylene sulfide insert. Strain relief is provided by the combinator convolute tubing, metal EMI braid, and 0.5" extra cable length. The braided items are secured by a band strap at each connector/cable interface. The convolute tubing is threaded into the connectors. Wire crimping is performe SVHS4909 (based on MSFC Spec-Q-1A). B. Test - Component Acceptance Test - The 392 harness is subjected to acceptance testing per AT-E-392 prior to fi acceptance to ensure there are no workmanship problems that could cause an or short circuit. Each connector/harness interface is subjected to a 9-lb. test. The insulation resistance between each conductor and the ground circ is measured during this test to ensure there are no intermittent shorts and verify the integrity of the harness strain relief. A continuity test is performed to measure the resistance of each circuit to ensure there are no circuits or high resistance paths. The insulation resistance and dielectric strength between each conductor and the shield ground is measured to ensure there are no shorts. PDA Test - The battery voltage sense line is checked during DCM PDA testing per SEMU-(para. 4.0 (Electrical Testing). Certification Test - Certified for a useful life of 15 years (ref. EMU1-13-046). C. Inspection - To ensure that there are no workmanship problems which could cause an open short circuit in the harness conductors, the following inspections are made Contact crimp samples are made prior to start of crimping and at the conclusion of crimping and pull tested to ensure the crimp tooling is opera properly. All crimp terminations are inspected for defects. Harness cables conductors are visually inspected prior to assembly to ensure there are no defects which could cause an open or short due to workmanship. Electrical b test is performed to verify ground path through various points on the harne In-process and final electrical checkout of the harness (conductor continui dielectric strength, and insulation resistance tests) are performed to ensu there are no open/short circuits. D. Failure History - None. E. Ground Turnaround -

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	392FM08		<p>Tested per FEMU-R-001, V1103 Performance Data and Item 113 Regulator Check. FEMU-R-001, Para. 8.2, EMU Pre-flight KSC Checkout for EET processing.</p> <p>F. Operational Use - Crew Response - PreEVA: When CWS data confirms improper battery load, troubleshoot problem. EMU battery using verified good spare(s). Consider third EMU if available. Continue EVA prep. EVA: If comm is available and fan RPM's are nominal, con EVA.</p> <p>Training - Standard training covers this failure mode.</p> <p>Operational Considerations - Flight rule A15.1.2-2 of "Space Shuttle Operational Flight Rules", NSTS-128 defines go/no go criteria related to EMU battery voltage sensing. Generic Checklist, JSC-48023, procedures Section 3 (EMU Checkout) and 4 (EVA prep) verify hardware integrity and systems operational status prior to EVA. Real Time Data System allows ground monitoring of EMU systems.</p>

EXTRAVEHICULAR MOBILITY UNIT
SYSTEMS SAFETY REVIEW PANEL REVIEW
FOR THE
I-392 JUMPER SIGNAL HARNESS
CRITICAL ITEM LIST (CIL)
EMU CONTRACT NO. NAS 9-97150

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